

PATENT  
AMENDMENTIN THE CLAIMS:

1. (Original) A method of tracing the activity of an expression, said method comprising  
2. the steps of:
  3. (a) specifying a machine-implemented process in which a trigger expression is  
4. to be traced;
  5. (b) specifying the trigger expression to be traced in the machine-implemented  
6. process;
  7. (c) storing the state of the trigger expression when it is active within the  
8. machine-implemented process without interrupting the process; and
  9. (d) restoring the state of the trigger expression when requested.
1. 2. (Original) The method of claim 1, further comprising:
  2. (a) imposing a condition onto the trigger expression; and
  3. (b) storing the state of the trigger expression only when the condition is satisfied.
1. 3. (Original) The method of claim 1, wherein the step of storing the state of the trigger  
2. expression further comprises:
  3. (a) creating a history of the trigger expression comprising storing each state of  
4. the trigger expression when it is active.
1. 4. (Original) The method of claim 3, further comprising:
  2. (a) displaying the history such that the state of the trigger expression each time  
3. the trigger expression was active can be displayed separately.

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- 1       5. (Original) The method of claim 1, wherein the trigger expression is one which results  
2       in an L value during the machine-implemented process.
- 1       6. (Original) The method of claim 5, wherein the activity is a call to a memory location  
2       of the trigger expression.
- 1       7. (Original) The method of claim 6, wherein the call to a memory location is a Read  
2       and/or a Write.
- 1       8. (Original) The method of claim 1, further comprising:  
2           (a) specifying at least one attached expression;  
3           (b) storing the state of the at least one attached expression when the trigger  
4           expression is active within the machine-implemented process; and  
5           (c) restoring the state of the at least one attached expression when requested.
- 1       9. (Original) The method of claim 1, wherein the machine-implemented process is a  
2       computer program.
- 1       10. (Original) The method of claim 1, as included in an object level trace program.
- 1       11. (Original) The method of claim 1, as included in a debug program.

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1       12. (Original) A method of tracing the activity of an expression in an executing computer  
2       program, said method comprising the steps of:  
3           (a) specifying the computer program in which a trigger expression resulting in  
4           an L value during the execution of the computer program is to be traced;  
5           (b) specifying the trigger expression and any optional attachment expressions to  
6           be traced in the computer program;  
7           (c) imposing a condition onto the trigger expression;  
8           (d) storing the state of the trigger expression and any optional attachment  
9           expressions when the computer program has accessed a location in memory  
10           pertaining to the trigger expression and the conditions are satisfied to create  
11           a snapshot, the step of storing accomplished without interrupting the process;  
12           (e) creating a profile of the trigger expression comprising storing each snapshot;  
13           (f) displaying the profile such that each snapshot can be displayed separately;  
14           and  
15           (g) restoring the state of each snapshot, when requested.

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1       13. (Currently Amended) A tracing device, comprising:

2           (a) a memory functionally connected to ~~the digital~~ a digital logic device capable  
3           of executing a sequence of instructions;

4           (b) a program to monitor the activity of an expression during the execution of the  
5           sequence of instructions;

6           (c) a snapshot of the state of the expression every time the expression is active  
7           during the execution of the sequence of instructions;

8           (d) a history stored in the memory, the history being a plurality of snapshots;

9           (e) a state restorer which restores the state of the expression in a snapshot;

10          (f) a user interface by which a user may interact with the program, a snapshot,  
11           and the history.

1       14. (Currently Amended) The tracing device of claim 13 as incorporated into ~~an~~ debug  
2           debug program to debug the sequence of instructions.

1       15. (Original) The tracing device of claim 13 as incorporated into an object trace program.

1       16. (Original) The tracing device of claim 13, further comprising an attachment  
2           expression profiler which stores the state at least one attachment expression with each  
3           snapshot.

1       17. (Original) The tracing device of claim 13, wherein the tracing device and the digital  
2           logic device are incorporated into the same computer.

1       18. (Original) The tracing device of claim 13, wherein the tracing device and the digital  
2           logic device are separate units connected by a data communications link.

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1       19. (Original) A processing device to trace the activity of an expression in a computer  
2       device, said processing device, comprising:  
3           (a) a processor;  
4           (b) a memory functionally connected to the processor;  
5           (c) a first computer program executing by the processor in which the expression  
6       is active;  
7           (d) a second computer program to trace the activity of the expression within the  
8       memory during the execution of first computer program;  
9           (e) a snapshot which stores the state expression every time the expression is  
10      active during the execution of the first computer program;  
11      (f) an attachment expression profiler which stores the state at least one  
12      attachment expression with each snapshot;  
13      (g) a history stored in the memory, the history being a plurality of snapshots;  
14      (h) a display unit to display the history to a user; and  
15      (i) an input device by which the user can input the expression to be traced.

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1       20. (Original) A profiler to record the profile of a particular expression/variable within a  
2       program executing within a logical processing device, said profiler comprising:

3           (a)       means to choose the particular expression/variable in a program executing  
4           within the logical processing device;  
5           (b)       means to record a snapshot of the particular expression/variable whenever the  
6           program addresses a memory location of the particular expression/variable  
7           without interrupting the program;  
8           (c)       means to collect a plurality of snapshots into a profile of the particular  
9           expression/variable, each snapshot corresponding to each time the program  
10          addressed the memory location of the particular expression/variable;  
11          (d)       means to display the profile of the particular expression/variable.

1       21. (Original) The profiler of claim 20, further comprising:

2           (a)       means to set at least one attachment expression active within the program;  
3           (b)       means to record the state of the at least one attachment expression whenever  
4           a snapshot of the particular expression/variable is taken;  
5           (c)       means to attach each state of the at least one attachment expression to the  
6           snapshot of the particular expression/variable when taken; and  
7           (d)       means to display the profile of the at least one attachment expression to a  
8           user.

1       22. (Original) The profiler of claim 20, further comprising;

2           (a)       means to delete the profile.

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1        23. (Original) The profiler of claim 20, further comprising:  
2                (a) means to change the particular expression/variable.

1        24. (Original) The profiler of claim 21, further comprising:  
2                (a) means to change the at least one attachment expression.

1        25. (Original) An article of manufacture, comprising a data storage medium tangibly  
2                embodying a program of machine readable instructions executable by an electronic  
3                processing apparatus to perform method steps for operating an electronic processing  
4                apparatus, said method steps comprising the steps of:  
5                (a) initiating a user interface to exchange data input/output with a user and an  
6                electronic processing apparatus;  
7                (b) requesting a trigger expression from a user;  
8                (c) requesting a program identification of a program in which the trigger  
9                expression is to be traced;  
10               (d) causing the electronic processing apparatus to execute the identified program;  
11               (e) storing the state of the trigger expression each time a memory operation  
12               occurs to the trigger expression during the executing identified program  
13               without interrupting or otherwise stopping execution of the identified  
14               program as a snapshot;  
15               (f) maintaining the capability to restore each snapshot and display each snapshot  
16               to the user.

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- 1        26. (Original) The article of manufacture of claim 25, further comprising:
  - 2            (a) requesting the user to assign conditions to the trigger expression whereupon
  - 3                when the conditions are satisfied, a snapshot of the trigger expression is
  - 4                stored.
  
- 1        27. (Original) The article of manufacture of claim 25, further comprising:
  - 2            (a) requesting the user to indicate attached expression whose states are also
  - 3                stored in a corresponding snapshot whenever a snapshot is stored for the
  - trigger expression.

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